objected to possesses the characteristics of plate glass, and is made and used as and for the purposes and under the name of plate glass, the circumstance of its being produced by blowing and having a smooth surface when first produced does not prevent it from coming under the description given in the specification; and thirdly, that the article objected to —that is to say, blown plate glass in its unground and unpolished state—though not universally known in the trade by the term "rough plate," is so far known by that term in the glass trade and among builders, the immediate consumers of plate, sheet, and other glass, as window glass, as to justify its recognition by that term."

And he therefore determined that the glass objected to *is* within the terms employed in the specification.

We give the particulars of this curious case (without reference to the decision), because of the positive information it contains, and as an instance of the necessity of precision in specifications, which we hope will not be disregarded. A considerable expenditure was at stake.

DECORATIVE ART IN GLASS—
STAINED AND PAINTED.

In concluding his historic review of middle-age art, delivered of late at the School of Design, Somerset House, Mr. Wornum proceeded on Friday, the 2nd, to treat of stained and painted glass, as in a manner supplementary to Gothic art, since hitherto almost exclusively practised in Gothic buildings. But whatever prestige such exclusive application may have given rise to, said the lecturer, it will be our business rather to destroy than to encourage; for we must spread the beautiful in all directions,—extend it to every province,—at least we will try to do so.

The old Egyptians have not yet been surpassed, if even approached, by the moderns in the art of staining glass; but we know nothing of stained windows earlier than the eighth century, and have no *remains* of a period earlier than the twelfth.

The ancients, however, did glaze their windows not only with common panes of glass, but with ground plate glass, to keep inquisitive eyes out: a window of this kind was discovered in a bath at Pompeii, but the glass was all broken to pieces. In the baths of the villa of Diomedes similar glass was found. The Greeks called glass 'hyalos,' from the Coptic: it was introduced from Egypt.

In mere coloured ornamental glass the resources of the ancients were surprising. There was no marble, no precious stone, which they did not successfully imitate. They had every variety of cup and vase made of this beautiful material. Glass drinking vessels were common in the time of Hadrian, and some of them, of rarer quality, displayed all the prismatic colours, variously in various lights. These were of Egyptian manufacture. With the art of glass blowing, as may be conceived, the ancients were well acquainted.

With all the means such examples imply, the *absence* of coloured plate glass for windows amongst the ancients should strike us as more singular than the *discovery* of any such remains; especially as it was the custom to decorate entire walls with plates of glass and polished marbles; and as the marbles were invariably coloured (and as they knew well how to imitate marbles, as already remarked by the lecturer), it is highly improbable that the glass was invariably white. Yet the pure crystal glass was considered the most valuable by the Romans. Talc was also used by the ancients for windows, having this great advantage for a hot climate, that it excludes the heat while it admits the light of the sun. As to the ancients having had glazed windows there can be no question, and this fact ascertained, it would be very strange if with their elaborated systems of decoration, they did not colour them. We shall probably yet find some examples before the excavations of Pompeii are completed.

The notices of windows are more frequent as we approach the middle ages. St. Sophia's, of Constantinople, was conspicuous for the number of its glass windows; and, from the many-coloured rays which the Greek poet describes as penetrating them, it would seem that they were of stained glass. This was in the sixth century, and it appears to have been then a general practice in the southern parts of Europe to glaze the church windows. In England they were not so protected till a century later.

The first positive historical notice of stained glass decorations, the lecturer believed to be that of the adornment of the old church of St. Peter's, at Rome, with stained glass windows, by Leo III., in the eight century. Painted glass we first read of in the eleventh century, when mosaic workers from Constantinople adorned the chapter-house of the celebrated Neapolitan Monastery of Montecasino, with windows of painted glass. These were leaded, and supported by iron frame work, as in modern times.

This mention of the mosaic workers, while it constitutes one of those interesting facts which point so decidedly to the capital of the Eastern empire, as the great preserver and promoter of all middle-age art, seems also to indicate, with some certainty, the original source of stained-glass windows in the glass tesselations, the opus Grecanicum of the Byzantines. With this class of art the Italian churches were richly decorated, and the passage from the inlaid glass of the walls and pulpits to the leaded glass of the windows, was not a very great step. This is all the more probable from the circumstance, that while these glass tesselations were common as mural decorations, pieces of talc were still used for windows, as in the church of San Miniato, at Florence, of the early part of the eleventh century; and if these be the original windows, which there is no reason to doubt, they are the oldest in Europe, or at least in the west, and are about 100 years older than the earliest remains of stained-glass windows—those of the cathedrals Angers and St. Denis.

Many of the glass tesselations, according to Theophilus, were actually destroyed for the sake of getting coloured glass for windows. They were of course remelted and cast into small plates, according to the practice of the time. Theophilus also says, that the French were particularly clever in converting the old pagan glass vessels, of many colours, into fine tables, that is panes, of glass, for windows. There would have been more reason for praising their ingenuity if they had preserved the pagan bottles and rivalled their composition by original glass of their own. But such passages as these open our eyes to the way in which ancient ornamental works have so greatly disappeared; and they should teach us to be cautious how we discredit statements we find in ancient authors, simply because we meet with no examples of such works as we occasionally read of in their writings.

The ancient process of making a stained glass window is thus described by Theophilus. The design was first made on a chalked board, a kind of cartoon. On this the outlines and general markings were well defined, and the colour each part was destined to be was written in its place. Then a piece of glass of the required colour, large enough to cover that portion of the cartoon inscribed with its name, was placed over it; the exact form of the space was traced on the glass; and finally, it was shaped with the heated iron then used in place of the diamond. The pieces were then all fitted close together on the cartoon, and the lines and shadows were carefully painted in enamel brown. The introduction of ornaments, such as we find in the illuminated manuscripts, is then directed by Theophilus, a circumstance which points most decidedly to the source of the general ornamentation of glass. He concludes by minute instructions how the pieces of glass are to be fired in the furnace, some colours requiring more heat than others: the white, yellow, and purple may be thrust far into the furnace, but green and sapphire, or blue, must be kept near the orifice, as they will not stand so great heat. When sufficiently fired, the various pieces were leaded together, and the picture thus completed. Theophilus describes many kinds of ornamental glass, including gold and silver tints, and designates nearly every remarkable specimen Greek.

The great point of the directions given by this author is, that he clearly describes the enamelling of glass, however simple; not the mere composition of an ornamental design in coloured glass, or what is commonly called pot-metal—glass coloured bodily while in the melting pot; but the enamelling confined to drawing and shading. The great value, however, of Theophilus's treatise, is affected by the doubts as to its precise date—according to some as early as the tenth, to others as late as the thirteenth century.

All the ancient specimens of stained glass preserved are pot-metal; and the earliest middle-age windows were doubtless of this same description: it is to this nature, perhaps, that they owe their name of mosaic glass, if not to the fact of being made out of old glass mosaics.

In the fourteenth century this practice of using pot-metal was in great part superseded by the use of superficially stained or coated glass. This is made either by flushing or floating an enamel stain upon the glass, and then firing.

In the sixteenth century, a third process was introduced,—that of actually painting in enamel, similar, exactly, to the modern process of porcelain painting.

Enamel, as many of you know, is glass made opaque by oxide of tin, and fusible by oxide of lead. This gives a white, but you may make any colour by mixing the various mineral oxides with an enamel flux, commonly composed of 32 parts flint glass, 12 pearl ash, and 2 of borax. With this flux you grind up your colour, and then mix it with a little oil of lavender; lay on the colour with a sable pencil, exactly as in oil painting, then pass the picture through the fire and the whole vitrifies and becomes indelible. The metallic oxides being enveloped in the flux are preserved from contact with the atmosphere, and thus become permanent.

The lecturer then proceeded to review some examples of these three kinds of stained or painted glass, interspersing his descriptions with much interesting matter, which we regret to be obliged to pass over. In allusion to the monk Theophilus's idea, that tan colour constituted the proper flesh tint, he inferred that this little circumstance would appear to throw some light on the moot point of the country to which he belonged. Both the Germans and the Italians, he remarked, have claimed him, but the tawny flesh seems fairly to give him to the Italians. With regard to the sombre mellowness of tint in old coloured glass, the lecturer regarded the taste in its favour as an acquired one, to which it was but little entitled, considering that it was merely produced by the dirt from which modern glass is more thoroughly cleansed in the process of manufacture. But from whatever cause produced it remains to be considered whether or not such a sombre and mellow effect be not the best adapted to ecclesiastical purposes. On the subject of harmony in juxta positions of colour, he considerably enlarged, producing a host of evidence in illustration from the beautiful plumage of birds in the British Museum and elsewhere. Perhaps in no species of art, he remarked, is it more necessary to observe the laws of harmony in colours than in glass painting. By the physical organization of the eye it requires *all* the primary colours to satisfy it — red, yellow, blue: the secondaries—orange, green, and purple—too, are very important. No combinations are good which are not in accordance with the natural laws of colour, and the chief condition is, that *all* must be present in every composition and properly balanced.

Having explained the three methods of glass painting, the lecturer then proceeded to point out the various characters of design prevalent in the different periods.

In the early period, down to the fourteenth century, when the mosaic method exclusively prevailed, the windows consisted of diaper grounds, containing panels with figure subjects, scriptural and domestic; the whole being surrounded by a foliaged or geometrical border; the prevailing ornaments and the panels being of a Byzantine character, and in all respects similar to the MSS. There is not much early glass in England. The most per-

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